



June 25, 2018

Ms. Seema Verma
Administrator
Centers for Medicare and Medicaid Services
200 Independence Ave SW
Washington, DC 20201

Docket Number CMS-1694-P

Submitted Electronically to www.regulations.gov

Dear Administrator Verma:

We appreciate the opportunity to provide comments on the “Medicare Program; Hospital Inpatient Prospective Payment Systems for Acute Care Hospitals and the Long-Term Care Hospital Prospective Payment System and Proposed Policy Changes and Fiscal Year 2019 Rates; Proposed Quality Reporting Requirements for Specific Providers; Proposed Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs (Promoting Interoperability Programs) Requirements for Eligible Hospitals, Critical Access Hospitals, and Eligible Professionals; Medicare Cost Reporting Requirements; and Physician Certification and Recertification of Claims” proposed rule. Our comments focus on the vital need for CMS interoperability standards that embrace and promote patient centered connected care as a means for patient engagement and improved care delivery.

Interoperable, connected health requires the use and sharing of a broad ecosystem of digital health information. Certified electronic health record technology (CEHRT) comprises one component of interoperable digital health information; digital, interoperable, connected medicine is not conducted solely by an electronic health record. Instead, interoperable, patient centered, connected care embraces patient engagement with providers and use of patient generated health data (PGHD). The design of the meaningful use CEHRT program with a singular focus on EHRs has created significant challenges to the use of evidence based connected digital health and evidence based PGHD. We urge CMS, in its work to revise the Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs, to adopt a broader perspective on interoperable health information and its use to improve patient care through patient engagement, more efficient patient care delivery, and improved quality of care.

Comments on Proposed “Promoting Interoperability Program”: Urge CMS to include three simple patient engagement functions that promote evidence based patient centered connected care

While we support the concept and work to simplify the EHR incentive program, the proposed single patient “engagement” functionality is not aligned with evidence-based patient-provider connected health. CMS proposes to require one function to meet the patient engagement objective of promoting interoperability: “Provide Patients Electronic Access to Their Health Information.” We fully support requiring electronic/digital access to a patient’s EHR (and note that this standard is simply the electronic or digital form of the patient right established by HIPAA). However, this functionality is not an evidence based connected health function associated with patient engagement. Rather, remote patient monitoring (RPM) of patients with several chronic conditions is associated with improved outcomes,

patient engagement, and efficient care delivery. As noted by the AHRQ telehealth evidence review, the ASPE telehealth review, and the recent unbundling/activation and coverage of CPT 99091 by CMS and the anticipated creation of new CPT codes by the American Medical Association on physiological remote patient monitoring, and the Medicare Access and Chip Reauthorization Improvement Activities (IA_14 in particular) – RPM is interoperable digital communication of patient physiological data, provider-patient communications, and care management/coordination that improves outcomes and actively engages patients in their care. The Mathematic Policy Research’s publication, “Evaluation of the Diffusion and Impact of the Chronic Care Management (CCM) Services: Final Report”, adds to the evaluated body of research, documenting that chronic care management, which may be conducted by remote patient monitoring, is associated with significant Medicare savings¹.

We urge CMS to establish a connected health standard as part of a “promoting interoperability program,” and believe that it can be a simple yes/no to a question about making this service(s) available to a subset of patients upon discharge for a time limited period. We suggest that the following evidence supported uses of PGHD be an integral part of a promoting interoperability program:

- 90-day post-discharge remote patient monitoring programs for specified chronic conditions’ such as heart failure, atrial fibrillation, diabetes, COPD, and, multiple chronic conditions
- 90-day post discharge medication reminder/medication adherence programs
- 90-day post-discharge patient education and care management program

We refer CMS to Appendix A which includes a table of evidence and evidence reviews on RPM. We note that the post-discharge programs, usually of a 90-day length, show uniformly positive outcomes, reducing readmission rates significantly.

We suggest that for the first year, eligible hospitals be required to operate one of the three types of aforementioned programs for a subset of patients and simply respond yes or no to each option.

Comments on “Request for Information on Promoting Interoperability and Electronic Healthcare Information Exchange through Possible Revisions to the CMS Patient Health and Safety Requirements for Hospitals and Other Medicare- and Medicaid-Participating Providers and Suppliers.”

As communicated earlier in this letter, PCHAlliance believes that it is vital for CMS to develop and implement standards that advance digital, interoperable patient centered health care delivery. Sharing of data between providers is an important component of that, but equally important is communication between providers and their patients and patient caregivers. We believe that CMS must include and prioritize development of standards as conditions of participation; as well as, in the promoting interoperability program, that embed evidence-based provider programs for interoperable PGHD. We urge CMS to include, as a standard for hospital participation in Medicare and Medicaid, the following types of meaningful patient-provider connectivity that are supported by clinical evidence as improving care delivery (see appendix A):

- RPM readmission prevention program or capability to support such a program as a standard

¹ Schurrer, O’Malley, Wilson, McCall, and Jain, Mathematica Policy Research, *Evaluation of the Diffusion and Impact of the Chronic Care Management (CCM) Services: Final Report*, November 2, 2017.

- PGHD capability and use designed in a manner that follows an evidence based use as a standard
- Patient specific education on a near real time digital basis as a standard
- Secure messaging capability as a standard

Conclusion:

It is vital to provide incentives and standards that promote and require adoption of evidence based connected care. **There is an extensive and growing body of clinical evidence supporting the use of remote access technology (including telemonitoring and remote patient monitoring) post hospital discharge – to conduct disease/care management/patient engagement.** This clinical evidence demonstrates both improved outcomes and reduced healthcare costs when used for monitoring chronic conditions, including hypertension, diabetes, COPD, asthma, heart failure and obesity. In fact, the clinical evidence for remote access technologies and telemonitoring demonstrates it should be deployed within the hospital and long-term care delivery systems extensively. Yet, the proposed promoting interoperability standards do not encourage or require eligible entities to update and adopt evidence based interoperable connected health. We urge CMS to drastically modify its approach to promoting interoperability to include interoperable connected health.

We appreciate your consideration of our comments and are available to provide additional information if you have any questions.

Sincerely,



Rich Scarfo
Vice President, Personal Connected Health Alliance

Appendix A: Evidence Summary and Tables Outlining Clinical Studies

Appendix A: Overview of Evidence on Successful Remote Patient Monitoring Programs:

Review of the extensive literature on remote monitoring, including review of decades of research and publications by Department of Health and Human Services, has provided guidance on the use cases for with remote patient monitoring can improve care. This overview focuses on pilots, programs and translational research focused on the successful use cases – i.e. those that earlier research showed would and could provide improved health outcomes.

Consistently the data shows that using remote monitoring to enable care management demonstrates improved health, reduction in health care utilization, and lower costs of care, when targeted to patients with:

- ✓ Multiple chronic conditions, high utilizations/costs, risk factors for falls [Patients are identified through claims and EHR data]
- ✓ Hospitalization for Congestive Heart Failure
- ✓ Hospitalization for Congestive Obstructive Pulmonary Disease
- ✓ Diabetes
- ✓ Sleep Apnea

The services provided that are associated with the positive results are:

- ✓ Remote monitoring of patient vital signs/biometric data in their home for a minimum of 90 days
- ✓ Nurse/care manager review of biometric data
- ✓ Self-management education
- ✓ Care plan modification and early intervention when adverse trends in biometric data are observed

Medicare Coverage Currently Does Not Cover Remote Monitoring, But Does Cover Care Management:

- ✓ Limited reimbursement is available, with strict rules, for a physician or the employed care manager to conduct care management
- ✓ Reimbursement does NOT cover investment or use of remote monitoring technology. Specifically, there is no capital adjustment made to accommodate remote monitoring technology that a provider must provide to enable remote monitoring enabled care management. [It is possible new CPT codes will be covered]

Savings reported for remote monitoring interventions, including care management and remote monitoring technologies:

- ✓ **University of Virginia:** \$500K savings for 426 patients monitoring post-discharge
- ✓ **Christus Health:** \$2.65 for every \$1 spent to conduct remote monitoring (includes equipment and labor costs)
- ✓ **Banner Health:** 34% cost reduction for patients monitored who have multiple chronic conditions and high cost profile
- ✓ **Danish Agency for Digitisation:** – Estimated annual net savings for remote monitoring COPD patients \$202M DKK
- ✓ **Medicare Health Buddy:** 7 to 13% lower costs per patient for remote monitored group compared to control group
- ✓ **PartnersHealth:** Estimated annual savings for remote monitoring of CHF patients \$10 million over 10 years for 3,000 patients
- ✓ **Care Beyond Walls:** Estimated total health charges reduced by 67%.
- ✓ **University of MS:** Estimated savings to Medicaid was \$339,184 for the 100 enrolled patients with diabetes
- ✓ **Presence Covenant Medical Center:** \$1 million savings for 665 hospitalized patients
- ✓ **Emory eICU:** \$1,486 average reduction in Medicare costs over a 60 day episode compared to control group

Recent and Focused Remote Monitoring Enabled Care Management for Patients with Chronic Conditions:

Institution & Links to Findings	Attributes of RPM and RPM Patients	Key Findings
Remote Monitoring for Targeted Patients with Multiple Chronic Conditions		
<p>Veterans Health Administration Home Telehealth</p> <p>Analysis of 15,600 patients, FY2012</p> <p>Office of the Inspector General, "Veterans Health Administration: Audit of The Home Telehealth Program", March 9, 2015</p> <p>https://www.va.gov/oig/pubs/VAOIG-13-00716-101.pdf</p>	<p>Three types of patients qualify for home telehealth:</p> <ol style="list-style-type: none"> 1) <i>Non-institutional Care (NIC) Patients, one or more of the following:</i> <ul style="list-style-type: none"> ✓ One or more behavior or cognitive problems ✓ Life expectancy of 6 months or less ✓ Difficulty with three or more Activities of Daily Living, such as bathing, dressing, and eating ✓ Or a combination of two or more of the Activities of Daily Living dependencies. 2) <i>Chronic Care Management (CCM):</i> Patient does not meet NIC criteria but has one or more chronic diseases, such as diabetes, congestive heart failure, or chronic obstructive pulmonary disease that requires ongoing case management, monitoring, and interventions. 3) <i>Health Promotion/Disease Prevention (HPDP):</i> Patient must meet one or more of six conditions, which includes being at risk for developing a chronic care disease, or needs assistance in choosing and maintaining healthy behaviors. <p><u>Services Provided:</u> "The goal of the Home Telehealth Program is to improve veterans' access to care while reducing patient treatment costs. The program does this by remotely monitoring patients' vital signs in the home and intervening early when adverse trends are detected." Page i</p>	<p>Home telehealth (care management enabled by remote monitoring) lowered health care utilization.</p> <p>For all three groups:</p> <ul style="list-style-type: none"> ✓ Reduced Hospitalization rates. Average reduction across the groups was 5 per 100 patients ✓ Reduced Bed Days of Care (BDOC) by 1.4 to .3 days per hospitalization. <p>NIC patients had largest reductions in hospitalization and BDOC.</p> <p>"The program has proven to be a low cost alternative (at less than \$2,400 per patient annually) to providing home-based primary care, which includes case management and in-home nursing care (about \$22,200 annually), or placing a veteran in a contract nursing home facility (about \$92,300 annually)."</p>
<p>Veterans Health Administration Care Coordination/Home Telehealth Program (CCHT)</p> <p>Analysis of 17,025 patients, FY 2003-2007</p> <p>http://www.health.gov.au/internet/mbsonline/publishing.nsf/Content/DD0F66183EDF57C6CA257CD20004A3A1/\$File/CHSWTFsub-HP-Attachment2.pdf</p>	<p><u>Non-institutional Care (NIC) Patients, one or more of the following:</u></p> <ul style="list-style-type: none"> ✓ One or more behavior or cognitive problems ✓ Life expectancy of 6 months or less ✓ Difficulty with three or more Activities of Daily Living, such as bathing, dressing, and eating ✓ Or a combination of two or more of the Activities of Daily Living dependencies. <p><u>Chronic Care Management (CCM):</u> Patient does not meet NIC criteria but has one or more chronic diseases, such as diabetes, congestive heart failure, or chronic obstructive pulmonary disease that requires ongoing case management, monitoring, and interventions.</p> <p>CCHT included: remote monitoring of vital signs of the patient in their home, nurse review of biometric data, and intervention/communication when adverse trends begin.</p>	<p>Home telehealth (care management enabled by remote monitoring) lowered health care utilization.</p> <p>CCHT prevented hospital admissions and reduced hospital length of stay.</p> <p>From a cohort of 17,025 CCHT patients:</p> <ul style="list-style-type: none"> ✓ 25% reduction in numbers of bed days of care, ✓ 19% reduction in numbers of hospital admissions, ✓ Mean satisfaction score rating of 86% after enrollment into the program
<p>Medicare Chronic Care Management (CCM) Benefit</p> <p>Analysis of claims of ALL beneficiaries receiving CCM services</p> <p>https://www.mathematica-mpr.com/our-publications-and-findings/publications/evaluation-of-the-diffusion-and-impact-of-the-chronic-care-management-ccm-services-final-report</p>	<p><u>Beneficiaries with:</u></p> <p>Two or more chronic conditions; Who agree to receive CCM when it is offered by their provider.</p> <p>CCM includes: enhanced access to the practice through a care manager, which enabled remote (telephonic or other communications means) condition monitoring between visits, medication monitoring and reconciliation, coordination of needed services. Must require a minimum of 20 minutes of clinical staff time each month.</p>	<p>Providers and care managers reported CCM led to positive outcomes for beneficiaries; Beneficiaries reported satisfaction with CCM; Claims analysis showed:</p> <ul style="list-style-type: none"> ✓ Overall Medicare cost savings of \$74 at 18 mos follow up; ✓ Reduced use of hospital, outpatient, and skilled nursing facility services; ✓ Increased use of professional services and home health care.

Institution & Links to Findings	Attributes of RPM and RPM Patients	Key Findings
<p>University of Virginia Medical Center; C3 Program (Care Coordination Center)</p> <p>626 All Payer 313 Medicare</p> <p>Poster session found at: https://www.nationalreadmissionprevention.com/content/documents/case-studies/university-of-virginia-health-system.pdf</p>	<p><u>Hospitalized Patients Upon Discharge for:</u></p> <ul style="list-style-type: none"> • Congestive heart failure (CHF) • NSTEMI/STEMI(AMI) – All Payers • Chronic obstructive pulmonary disease (COPD) • Uncomplicated pneumonia <p>C3 Intervention: Care management delivery system that:</p> <ul style="list-style-type: none"> • Utilizes biometric monitoring and education coaching using current remote monitoring technology • Provides clinical oversight of biometric data by experienced Registered nurse 	<p>C3 Care Management enabled by remote monitoring led to reduced re-hospitalizations and estimated cost of care savings:</p> <p>Outcomes:</p> <ul style="list-style-type: none"> ✓ 16-37% reduction in readmissions compared to benchmark rate(s) for Medicare patients ✓ 27-36% reduction in readmissions compared to benchmark rate(s) for All Payers <p>Additional Study for Medicare Beneficiaries that included joint replacement surgeries:</p> <ul style="list-style-type: none"> ✓ Annual cost savings for Medicare estimated at \$500K ✓
<p>Christus Health</p> <p>53 patients as of 9/30/14 115 patients as of 3/3/2015 Slides on RPM Program</p>	<p>Hospitalized patients upon discharge with: CHF, Heart Disease, COPD, Pneumonia, Diabetes, Sepsis</p> <p>Post discharge services: care management enabled by biometric monitoring.</p>	<p>RPM program associated with:</p> <ul style="list-style-type: none"> ✓ Reduced hospitalizations ✓ Lower costs per hospitalization ✓ High Satisfaction ✓ ROI calculated at \$2.65 saved per \$1 spent
<p>Banner Health</p> <p>128 patients, data for one year pre intervention and one year post intervention</p> <p>Press Release, Forbes Article: http://incenter.medical.philips.com/doclib/enc/12931987/Forbes_May_3_2015_Banner_Philips_eIAC_program_lo_res.pdf%3ffunc%3ddoc.Fetch%26nodeid%3d12931987</p>	<p>Patients with 5 or more chronic conditions and high utilization.</p> <p>90% enrolled were Medicare beneficiaries</p> <p>Intervention: Intensive Ambulatory Care Program – provides coordinated care management enabled by remote monitoring technology.</p>	<p>Intensive Ambulatory Care program led to:</p> <ul style="list-style-type: none"> ✓ 34% reduction in overall health costs ✓ 50% reduction in hospitalization rate ✓ 50% reduction in hospital bed days ✓ 75% reduction in 30 day readmission rates
<p>Analysis of Positive Airway Pressure Telemonitoring Device Data</p> <p>133,006 patients using CPAP</p> <p>Publication link: https://www.ncbi.nlm.nih.gov/pubmed/28629918</p>	<p>Patients using CPAP for greater than 90 days</p> <p>Average usage was 6 hours per day</p> <p>Evaluation of telemonitoring data for occurrence of Central Sleep Apnea (CSA) while using CPAP</p>	<p>Telemonitoring data showed occurrence of Central Sleep Apnea (CSA), which occurs for patients with multiple chronic conditions and/or with Obstructive Sleep Apnea.</p> <p>Early identification of CSA allows for intervention to improve compliance and outcomes.</p> <p>Review of telemonitoring data effectively identifies CPAP patients with CSA</p>
<h3>Remote Monitoring for Targeted Patients with Specific Condition (COPD, Heart Failure, Diabetes, Sleep Apnea)</h3>		
<p>Danish Agency for Digitisation Ministry of Finance, Denmark</p> <p>TeleCare Nord Pilot</p> <p>Analysis of 1,225 patients with COPD, CY 2016</p> <p>https://www.digst.dk/ServiceMenu/English/News/Telemedicine-benefits-COPDpatients-and-health-expenditure</p>	<p>Patients with severe COPD (rated as GOLD 3 &4 on a severity of disease scale)</p> <p>Intervention group provided with telemedicine home monitoring which includes:</p> <ul style="list-style-type: none"> ✓ Remote monitoring of vital signs of the patient in their home, ✓ Local health department/clinic review of biometric data, ✓ Intervention/communications based on changes in condition, ✓ Care management 	<p>Telemedicine home monitoring for patients with severe COPD was found to:</p> <ul style="list-style-type: none"> ✓ Reduce health costs by an estimated \$202million Danish Krone (DKK) annually ✓ Reduce hospital use and costs ✓ Improve self-care ability and engagement in care ✓ Improve quality of life, comfort and satisfaction
<p>Medicare Health Buddy Demonstration</p> <p>Baker, et. al., “Integrated Telehealth And Care Management Program For</p>	<p>Medicare patients with high costs and utilization and:</p> <ul style="list-style-type: none"> ✓ congestive heart failure, ✓ chronic obstructive pulmonary disease, or ✓ diabetes mellitus 	<p>Lower health spending for intervention group that received care management enabled by remote monitoring compared to the control group.</p>

Institution & Links to Findings	Attributes of RPM and RPM Patients	Key Findings
<p>Medicare Beneficiaries With Chronic Disease Linked To Savings”, HEALTH AFFAIRS 30, NO. 9 (2011): 1689–1697</p> <p>http://content.healthaffairs.org/content/30/9/1689</p>	<p>Health Buddy Intervention: Care management enabled by remote monitoring.</p> <p>“a telehealth tool that gives providers an opportunity to communicate better with patients and thus improve the information available to care managers.....The application [telehealth tool] incorporated an exception based approach that aimed to identify the need</p> <p>for care management interventions based on deteriorating vital signs and symptoms and to identify gaps in patients’ behavior and knowledge. After reviewing patients’ information, care managers could contact patients who appeared to be at risk for deterioration or who required intervention to ensure that they received appropriate services.”</p>	<ul style="list-style-type: none"> ✓ Mean health spending in the intervention group decreased approximately 7.7–13.3% over two years, compared with a matched control group. ✓ “In the first year after the intervention was available, mean spending in the intervention group was \$3,608, compared with \$4,107 for the control group (p < 0:01).” ✓ “In the second year of the intervention period, mean quarterly spending in the intervention group was \$3,568, compared with \$4,051 for the control group (p < 0:01).”
<p><i>Partners Health Care Center for Connected Health</i></p> <p>Analysis of 3,000 patients</p> <p>http://content.healthaffairs.org/content/33/2/194.full.html</p> <p>Review of several types of telehealth interventions – Remote Monitoring intervention included was the Partners Congestive Heart Failure Home Monitoring Program</p>	<p>Congestive Heart Failure Patients with recent hospitalization</p> <p>Upon discharge patient provided with: remote monitoring and care management for 120 days post discharge. Specifically, in-home monitoring of weight, blood pressure, heart rate, and pulse oximetry. These data were uploaded daily, and decision support software identified those patients who needed attention.</p>	<p>Lower health care costs for group receiving care management enabled by remote monitoring.</p> <p>RPM provided for 120 post discharge associated with:</p> <ul style="list-style-type: none"> ✓ 44% reduction in hospital readmissions compared to usual care ✓ Cost savings of more than \$10 million over a 10 year period compared to usual care.
<p>Care Beyond Walls and Wires: Remote Heart Failure Monitoring and Healthcare Utilization Analysis in a Rural Regional Medical Center</p> <p>50 heart failure patients, Medicaid</p> <p>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4365431/</p>	<p>Medicaid patients with hospitalization and diagnosis of heart failure</p> <p>The intervention was to provide remote wireless monitoring via mobile broadband to facilitate patient and care team co-management of HF in a predominantly rural, disproportionately Native American patient population. It included:</p> <ul style="list-style-type: none"> ✓ Remote monitoring of vital signs of the patient in their home, ✓ Care manager review of biometric data, ✓ Intervention/communications based on changes in condition, ✓ Care management 	<p>Analysis of the 6 months prior to enrollment and the 6 months after enrollment in the remote monitoring intervention showed:</p> <ul style="list-style-type: none"> ✓ 42% decrease in the number of hospitalizations ✓ 64% decrease in hospital days ✓ 67% decrease in total health care charges
<p><i>University of Mississippi Medical Center Mississippi Telehealth Network</i></p> <p>100 Medicaid Patient Pilot</p> <p>Poster Presentation by K. Henderson, 2015 “How Mississippi is Leading the Way in Innovation”</p>	<p>Rural residents with type 2 diabetes (and on Medicaid), recruited to participate in University of Mississippi Telehealth Network remote patient monitoring project through rural health clinics.</p> <p>Intervention: care management and education enabled through remote monitoring technology</p>	<p>Improved health and reduced health care utilization for those who received care management through a remote monitoring.</p> <ul style="list-style-type: none"> ✓ Estimated savings to Medicaid was \$339,184 for the 100 enrolled patients. ✓ Reduced HbA1C by 1.7% ✓ No hospitalizations or emergency department visits for 12 months for the enrolled patients ✓ 71% of enrolled patients lost weight wright ✓ Medication compliance improved
<p>Medication Adherence and mHealth: The George Washington University and Wireless</p> <p>50 Patient Pilot</p> <p>https://www.ncbi.nlm.nih.gov/pubmed/?term=Mobilizing+Your+Medications%3A+An+Automated+Medication+Reminder+Application+for+Mobile+Phones+and+Hypertension</p>	<p>Medicaid patients with hypertension and prescribed 2 or more medications to control hypertension. 96% enrollees were African American.</p> <p>Intervention: Provided a automated medication reminder on their mobile phone.</p>	<p>“Average blood pressure and level of control during study period improved significantly after initiation of the study and remained improved from baseline through the course of the study.”</p>

Institution & Links to Findings	Attributes of RPM and RPM Patients	Key Findings
<p>+Medication+Adherence+in+a+High-Risk+Urban+Population</p> <p>Effect of Telemedicine Education and Telemonitoring on Continuous Positive Airway Pressure Adherence</p> <p>1,455 patients, four arm trial</p> <p>https://www.ncbi.nlm.nih.gov/pubmed/28858567</p>	<p>Patients with suspected obstructive sleep apnea underwent home based testing with 556 being prescribed CPAP.</p> <p>Intervention: Those prescribed CPAP were randomized to: 1) web-based OSA education (Tel-Ed) and 2) CPAP telemonitoring with automated patient feedback (Tel-TM). Patients were randomized to 1) usual care, 2) Tel-Ed added, 3) Tel-TM added, or 4) Tel-Ed and Tel-TM added (Tel-both)</p>	<p>“The use of CPAP telemonitoring with automated feedback messaging improved 90-day adherence in patients with OSA”</p> <p>Use of CPAP treatment reverses high and increasing overall health care utilization trends, and treatment can reduce physician, outpatient, and hospital costs [Potts, 2013]</p>
<p>Use of Cloud Connected Devices (RPM) to Allow Clinicians to Identify Patients in Need of Alternative/Better Device to Control Sleep Apnea</p> <p>“Adherence to Positive Airway Therapy After Switching from CPAP to ASV: A Big Data Analysis”</p> <p>198,890 patients</p> <p>https://www.ncbi.nlm.nih.gov/pubmed/29198291</p>	<p>Patients with cloud based connected Continuous Positive Airway Pressure (CPAP) or Adaptive Servoventilation (ASV) or who switched from CPAP to ASV – Random sample of CPAP patients; 100% sample of ASV patients.</p> <p>Analysis of data to determine if those on CPAP who develop Central Sleep Apnea improve control with switch to ASV.</p> <p>Telemonitoring data allow for identification of those who develop CSA. For those switched to ASV, telemonitoring shows improved adherence upon device switch.</p>	<p>Telemonitoring effectively identified those CPAP users with treatment emergent CSA. Those who switched to ASV improved adherence.</p>
<p>Remote Monitoring in Hospital Setting to Improve Care, Address Staffing Shortages, and Promote Efficiency</p>		
<p>Presence Covenant Medical Center, Urbana, IL Remote Sitter</p> <p>Monitored 665 elderly patients</p> <p>https://www.chausa.org/publications/catholic-health-world/archives/issues/september-15-2016/remote-sitter-aims-to-lower-fall-risks-while-improving-staffing-efficiency</p>	<p>Pilot in October of 2014, monitored 665 elderly hospitalized patients for over 5,000 hours.</p> <p>Hospitalized elderly patients at risk of falling</p> <p>Service provided: Remote monitoring for danger and signs of patient fall</p> <ul style="list-style-type: none"> ✓ A certified nurse assistant at a remote location (140 miles away) watches the patient on a monitor ✓ Upon recognition of activity in which there is danger and/or risk of a fall, the assistant triggers a warning to attending staff ✓ At the facility, the attending nurse's phone sounds a special alarm. <p>Utilized 10 carts for observation of patients</p> <p>Expanded across four sites in 2016 and logged 16,131 hours monitoring fall risk patients from the TeleHealth center</p>	<p>The remote sitter monitoring system prevents falls and fall-related injury among elderly hospitalized patients and led to a cost savings.</p> <ul style="list-style-type: none"> ✓ 665 patients were successfully monitored with no adverse events and no patient injury ✓ System identified and prevented 161 potential falls ✓ Of the 665 patients, 3 patients fell, but experience no injury and no adverse event ✓ Estimated Combined savings of \$1.1 million through reduced falls, claims and FTEs
<p>Emory Rapid Development and Deployment of Non-Physician Providers in Critical Care</p> <p>CMS, CMMI Health Care Innovation Award Pilot Program</p> <p>Abt Associates, Evaluation of Hospital-Setting HCIA Awards, Submitted to CMS, November 1, 2016</p> <p>https://downloads.cms.gov/files/cmmi/hcia-hospitalsetting-thirdannualrpt.pdf</p>	<p>Train/deploy critical care NPs and PAs, supported by an eICU, to address intensivist shortage</p> <p>The eICU program monitored critical care patients 24/7 and provided intensivist physician oversight and support on the night and weekend shifts, when physicians are not consistently present in ICUs</p> <p>The eICU staff:</p> <ul style="list-style-type: none"> ✓ Remotely monitored patients in participating ICUs via telemetry ✓ Alerted clinicians at the bedside when they noticed any potentially problematic changes in patient vital signs that exceeded clinical guidelines 	<p>The program reduced hospital utilization, reduced per episode Medicare costs, and was rated highly by patients.</p> <p>Evaluation of the program found it was associated with:</p> <ul style="list-style-type: none"> ✓ a \$1,486 reduction in average Medicare spending per 60-day episode relative to the comparison group ✓ a 2.1 percentage point decrease in the rate of 60-day inpatient readmissions relative to the comparison group <p>“This monitoring was credited with numerous “saves” when problems were brought to the attention of bedside staff that might otherwise</p>

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		have gone undetected, endangering patient safety.” (Abt Associates Evaluation Report)

Recent and Comprehensive Literature Reviews and Meta Analyses

<p>AHRQ Evidence Review</p> <p>Technical Brief No. 26 Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews</p> <p>June 2016</p> <p>www.effectivehealthcare.ahrq.gov/reports/final.cfm</p>	<p>Overview of the extensive body of evidence on telehealth for use by decision makers.</p> <p>1,494 citations about telehealth were identified, from which 58 systematic reviews met our inclusion criteria.</p>	<p>The evidence supports use of telehealth technologies as effective for:</p> <ul style="list-style-type: none"> “Remote monitoring of patients with chronic conditions; Communication and counseling for patients with chronic conditions; and Psychotherapy as part of behavioral health.”
<p>Inglis, et. al.,</p> <p>“Structured telephone support or telemonitoring programmes for patients with chronic heart failure (Review)”</p> <p>Cochrane Library 2010, Issue 8</p> <p>http://www.thecochranelibrary.com</p>	<p>Review of randomized controlled trials (RCTs) of structured telephone support or telemonitoring compared to standard practice for patients with CHF in order to quantify the effects of these interventions over and above usual care for these patients</p> <p>Included 25 studies and 5 published abstracts</p>	<p>Consistent finding of reduced hospitalization rates.</p> <p>“This review demonstrates that CHF interventions utilising information technology can reduce the rates of death and hospitalisation and improve the quality of life.”</p>
<p>Bashur et. al.,</p> <p>“Original Research The Empirical Foundations of Telemedicine Interventions for Chronic Disease Management”</p> <p>Telemedicine and e-health, VOL. 20 NO. 9 SEPTEMBER 2014</p> <p>https://www.ncbi.nlm.nih.gov/pubmed/24968105</p>	<p>Comprehensive review of telehealth and telemedicine research.</p> <p>Focus on remote monitoring and telemedicine for Congestive Heart Failure (CHF), Congestive Obstructive Pulmonary Disease (COPD), and Stroke.</p>	<p>Studies consistently found reduced hospital admissions, reduced length of stay, reduced emergency room use when remote monitoring was deployed for CHF, stroke and COPD.</p> <p>Study provides detailed citations and listings of the findings of these studies.</p> <p>“The preponderance of evidence from studies using rigorous research methods points to beneficial results from telemonitoring in its various manifestations, albeit with a few exceptions. Generally, the benefits include reductions in use of service: hospital admissions/re-admissions, length of hospital stay, and emergency department visits typically declined.”</p>